

Leaves used as fodder, etc., must differ in nutritive value to a very great extent if their starchy contents vary so largely during the day and night; it thus becomes of primary importance whether such leaves are gathered in the morning or the evening, in cold or warm weather, etc. The same applies to *tobacco* and *tea*, etc. It must make a vast difference to the smoker whether his tobacco abounds in carbohydrates or is relatively richer in the alkaloids. It appears that tobacco is habitually cropped in the morning in some countries, a fact which suggests what experience has already shown that a difference in the quality exists; it will be interesting to inquire further into these matters.

Sachs' results will also materially affect the physiological value of the analysis of leaves. Some of us know how great are the variations met with in the analysis of the ash contents of leaves of the same plant. It is clear that in addition to the age of the leaf, the soil, manure, etc., it is important to know the amount of starch present. It can not but happen that the mineral matters ebb and flow as well as the starch. The analysis of leaves will also be more valuable for the purposes of physiology if the numbers are stated not in simple percentages, but in terms of one square meter of leaf-surface.

The above brief summary of the results obtained by Prof. Sachs by no means does justice to the beauty of his methods, and the masterly way in which they are carried out; it must be admitted by all who understand the value and importance of this work that it is worthy of the great pioneer of vegetable physiology. Moreover; it suggests several matters which require further investigation, and no doubt would yield valuable results to those fortunate enough to have a botanical garden at hand.—*H. Marshall Ward, in Nature, XXIX., 554.*

GENERAL NOTES.

Necrology.—AUGUSTUS FENDLER died on the island of Trinidad, November 27, 1883, at the age of seventy-one. This we learn only at the present date, by a memorandum which was found on the table of the lamented Dr. Engelmann who was so soon to follow him. Fendler was born in Eastern Prussia, somewhere near Königsberg, received a good ordinary education, came to this country not far from the year 1840, was selected by Dr. Engelmann and the present writer to make a botanical collection in the northern part of New Mexico on the occasion of the movement of the United States troops to Sante Fé in 1846. Afterwards (1856-7) he, with a younger brother, migrated to Tovar, a German

settlement in the mountains of Venezuela, where he made a large collection of dried plants, and later a small one on the Isthmus. He then returned to his native country, but after a year or two his longing for botanical exploration and for a milder climate took him to Trinidad, where for a time he botanized with his old zeal and assiduity.

Fendler was a close and accurate observer, a capital collector and specimen-maker, very pains-taking and methodical, and his excellent distributed collections are classical, especially the first one, a large part of which was early named and published in the *Plantæ Fendlerianæ Novo-Mexicanæ*. It was the first collection made in that part of the country. He is commemorated in a beautiful and quite peculiar Saxifragaceous shrub, indigenous to New Mexico and Texas, *Fendlera rupicola*, and numerous species of his own discovery bear his name. He was very retiring and shy in habits, of refined bearing, and of a scientific turn of mind in other lines than that of his chosen pursuit of Botany. He kept up meteorological observations during most of his life, and he was very much interested in speculative physics. In the year 1874 he published at Wilmington, Delaware, where he then resided, at his own expense and, we suppose, with small returns, a well-written treatise (of 154 pages, 8vo.) on "The Mechanism of the Universe and its primary effort-exerting Powers; the Nature of Forces and the Constitution of Matter, with remarks on the Essence and Attributes of the All-Intelligent." He was one of the ingenious race of paradoxers, and it may be left to the future De Morgan to characterize his work. He will certainly be lastingly and well remembered in botany.

ALPHONSE LAVALLÉE, as we are grieved to learn, died at Segrez, his country seat, a few leagues from Paris, on the third of May last, at the age of only about forty-nine. This is a most unexpected and a heavy loss to botany, and especially to dendrology. A gentleman of abundant means and of great public spirit, he had taken ornamental trees and shrubs for his specialty, had formed nearly the largest and best collection of these in Europe, and had devoted himself to their study with utmost assiduity, endeavoring to determine them correctly, to ascertain their history, and to settle their synonymy. His first publication upon the *Arboretum Segrezianum* was his *Enumération des Arbres et Arbri-seaux cultivés à Segrez*, an 8vo. vol. published in 1877, in which much attention is paid to the synonymy. In 1880 he began his fine illustrated work, the *Icones Selectæ Arborum et Fruticum in Hortis Segrezianis collectorum*, in imperial quarto, of which he had brought out five parts, the last in December, 1882, with thirty plates; and early in the present year he published, in the same sumptuous form and with great beauty of illustration, *Les Clematites à Grand Fleurs*, with twenty-two plates. He had in preparation a general monograph of *Crataegus*, to be illustrated by eighty plates. Very recent letters spoke of some failure of health, and of a visit made to Cannes for its benefit, also mentioning that he had been pressed to take the chair of culture at the Paris Museum, which carries with it the superintendence of the *Jardin des Plantes*, vacated by the death of Decaisne, but was obliged to decline it. A serious loss, indeed, is sustained in the death, at middle age, of this zealous collector of our science, this most liberal-minded, amiable, and accomplished man. A. G.

Helonias bullata in Northern New Jersey.—While botanizing in low grounds bordering on Budd's Lake, Morris county, last year, I discovered several clusters of *Helonias bullata* bearing scapes of faded flowers; owing to lack of time I was unable to see to what extent it was established. I again visited the same locality this year, and after further search I found growing in a piece of woodland several acres in extent, a great abundance of these plants, many of them in fine flowering condition. There can be no possible doubt that *Helonias bullata* has been well established for years in this locality. It has been collected in various portions of Southern New Jersey, its range extending as far north as Freehold, Monmouth county; the only other habitat north of this being at Succasunna, Morris county. I am therefore pleased to be able to make an important addition to the habitats of what appears to be the most northern limit of this plant in New Jersey.—EUGENE A. RAU, Bethlehem, Pa.

Abnormal Trillium.—An abnormal specimen of *Trillium erectum* was collected near here a few days ago. It had the regular whorl of three leaves, and at the peduncle, about half way between the leaves and the flower, was a fourth and a smaller leaf. The flower itself was four-parted throughout. There were four sepals, four petals, eight stamens, four pistils, and a four-celled ovary. Two of the sepals were half green and had the other halves colored like the petals.—JOS. F. JAMES.

Note on Viola cucullata.—The flowers of *Viola cucullata* have been remarkable this spring for their numbers and size. Banks are literally blue with them, and many are an inch in diameter. But what is stranger is that they are being largely visited by bees, and are setting fruit freely. Heretofore the fruit has been difficult to find, but it is not so this year. Probably the size of the flowers is the cause of the visits of the bees, and the visits the reason for the setting of the fruit. A curious variation of color was also noticed. The flowers were of a light lavender, not a deeper color faded out, because there were too many of them, and others close by and under the same condition were of the deepest blue.—JOS. F. JAMES.

Arisæma polymorphum, Chapman.—When in North Carolina a few summers ago, I kept a lookout for *Arisæma polymorphum*, but found only a single very small plant of something I thought might be it, and brought it home to my garden. This season it has become strong enough to flower. I have little doubt it is the plant intended under the above name. But while Chapman describes the species as with "leaf solitary," mine has two leaves, as Gray describes *A. triphyllum* "mostly" to have. One of these, the weaker, is simply trifoliate, the other is nearly but not quite quinate, the two lateral lobes being very deeply divided, forming two large auricles towards the base. The spathe is of a very pale green, and with the spadix smaller than the form common in our woods. It is in bloom to-day, June 1st. Our wild plant was in bloom full a month ago. Believing the two to be distinct I have been to the woods for a quantity for comparison, and find all the flowers apparently a couple of weeks over bloom, and all faded, so that I can not find a single one on the road to fertility. Now these leaves are all cinereous on the under sur-

face, while the North Carolina one is pale green on both sides. So far there seemed to be some ground for distinction, but on looking about in the woods I found several in which one of the three leaflets was partly divided. In one case the division extended two-thirds of the distance towards the midrib. Still the gray under surface seemed uniform through all these wild plants. I was surprised to find all of them barren, and went to a locality where I knew I had collected ripe fruit, and found these plants quite different from the early ones. They were larger and stouter, purple stemmed, with two leaves on a stalk as in the North Carolina one, the leaves pale green on both sides, as in the North Carolina one, and just opening its flowers, also as in the one from North Carolina. I did not know before that there were early and late flowering ones with us; that the early ones had gray under surfaces, and that the early ones were barren. It will be interesting to know whether this holds good in other localities. But I suppose we shall have to consider *A. polymorphum* as merely *A. triphyllum*, without even honoring it with a varietal name.

By the way, Engler, in De Candole's monograph, adopts Schott's name, *Arisæma quinatum* for this *A. polymorphum*, and Blume's name, *Arisæma atrorubens*, for our *A. triphyllum* and varieties.—THOMAS MEEHAN.

EDITORIAL NOTES.

THE PHILADELPHIA MEETING promises to be an unusually important gathering for botanists.

ABOUT TWENTY BOTANICAL NOTES are found in the first part of the *Proc. Philad. Acad.* for 1884, principally by Mr. Thos. Meehan.

IN THE GAZETTE for April, p. 53, 54, *Antirrhinum Nevinianum* was by a clerical mistake given as *A. Nivenianum*. It should be corrected accordingly.

THE SUMMER COURSE IN BOTANY at Cambridge this year will be under the charge of Prof Wm. Trelease. It begins July 7th and lasts six weeks, and among advanced students special attention will be given to the study of Cryptogams.

THE WHOLE EDITION of the translation of Nägeli and Schwendener's work on the microscope, about to be published by a London firm, was recently destroyed by fire. It will again be put through the press, however, with as little delay as possible. This is the most important work for botanists on microscopic manipulation yet issued in our language.

A SOCIETY for the protection of alpine plants has been formed at Geneva. "L'association pour la protection des plantes" is its title, and already it numbers about two hundred members. The means used are to spread a knowledge of the danger by means of correspondence and publications; to post placards in Swiss hotels; to cultivate for sale such alpine plants as can be grown in the valleys, and thus furnish them already potted for transportation.